

- 9/7
- 61
1. (Twice Amended) A method for estimating residual noise in a frequency range of a desired part of a signal received via a digital cellular radio system, the desired part of the received signal representing a selected channel of the digital cellular radio system, the method comprising:  
modifying the amplitude of the received signal, the received signal including the residual noise;  
combining the received signal with the modified received signal to create a noise estimation measure; and  
transmitting, via the digital cellular radio system, the noise estimation measure or a post-processed version of the noise estimation measure to a link quality control system of the digital cellular radio system.
  2. (Twice Amended) The method according to claim 1, wherein the noise estimation measure is based on an average power content of the signal and the modified signal over their frequency spectra.
  3. (Twice Amended) The method according to claim 2, wherein the noise estimation measure is based on the average power content of the signal and the modified signal over one or more common ranges of their frequency spectra.
  4. (Twice Amended) The method according to any one of claims 1 to 3, wherein the signal is attenuated primarily outside a frequency range of the desired part of the signal.
  5. (Twice Amended) The method according to claim 2 or 3, wherein the noise estimation measure is based on a difference in average power content between the signal and the modified signal.
  6. (Twice Amended) The method according to any one of claims 1 to 3, wherein the signal is a digital signal.
  7. (Twice Amended) The method according to claim 4, wherein the signal is attenuated primarily outside the frequency range of the desired part of the signal via a digital filter.
  8. (Twice Amended) The method according to any one of claims 1 to 3, wherein the noise estimation measure is quantized in a number of different levels each indicating different levels of noise present.

10. (Twice Amended) The method according to claim 9, wherein a noise estimation measurement is performed during each of the basic time units of a channel of the digital cellular radio system, and the result is communicated to a link quality control system of the digital cellular radio system as an estimator of current link quality.

11. (Twice Amended) The method according to claim 9, wherein several noise estimation measurements are performed, the results are stored, and the results are evaluated, and a derived trend is communicated to a link quality control system of a digital cellular radio system as an estimator of current link quality.

12. (Twice Amended) The method according to claim 9, wherein the noise estimation measure transferred to the link quality control system is used by the digital cellular radio system to optimize user information channel throughput by adjusting at least one of the data transmission rate, the error correction depth, and a type of modulation.

13. (Twice Amended) The method according to claim 9, wherein the noise estimation measure is transferred to a digital demodulator and used to adjust a receiver algorithm.

14. (Twice Amended) An apparatus for estimating residual noise in a frequency range of a desired part of a signal received via a digital cellular radio system, the desired part of the received signal representing a selected channel of the digital cellular radio system, the apparatus comprising:

means for modifying an amplitude of the received signal, the received signal comprising the residual noise;

means for combining the received signal with the modified signal to create a noise estimation measure;

means for transferring the noise estimation measure to a processing unit

means for storing consecutive values of the noise estimation measure;

means for processing the consecutive values to extract a trend;

means for transmitting, via the digital cellular radio system, the stored consecutive values, the extracted trend, a post-processed version of the stored consecutive values, or a post-processed version of the extracted trend to a quality control system of the digital cellular radio system.

15. (Twice Amended) The apparatus according to claim 14, wherein the means modified for combining the signal with the signal to create a noise estimation measure comprise a power meter for measuring average power content of the signal and the modified signal over at least one of a plurality of common ranges of their frequency spectra.

16. (Twice Amended) The apparatus according to claim 14 or 15, wherein the means for modifying the amplitude of the signal comprising the noise include means for attenuating the signal primarily outside the frequency range of the desired part of the signal.

17. (Twice Amended) The apparatus according to claim 15, wherein the means for combining the signal with the modified signal to create a noise estimation measure comprise means for computing a difference in average power content between the signal and the modified signal.

b1 18. (Twice Amended) The apparatus according to claim 14 or 15, wherein the apparatus is adapted to handle digital signals.

19. (Twice Amended) The apparatus according to claim 18, wherein the means for attenuating the signal primarily outside the frequency range of the desired part of the signal comprise a digital filter.

21. (Twice Amended) A mobile telephone comprising:  
means for estimating residual noise in a frequency range of a desired part of a signal received via a digital cellular radio system, the desired part of the received signal representing a selected channel of the digital cellular radio system  
wherein the amplitude of the received signal is modified, the received signal comprising the residual noise;  
wherein the received signal is combined with the modified received signal to create a noise estimation measure;  
means for estimating residual noise in the frequency range of the desired part of the received signal;  
means for storing, evaluating, and transmitting, via the digital cellular radio system, at least one of resulting noise estimation measurements and post-processed versions of the resulting noise estimation measurements to a link quality control system of the digital cellular radio system.

22. (Twice Amended) The mobile telephone according to claim 21, wherein the mobile telephone is adapted to perform a noise estimation measurement during each of a plurality of basic time units of a channel of the digital cellular radio system.

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